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TITLE: Processing and calorizing of special steel castings

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TEXT: At the Kralovopol'skiy Machinebuilding Plant (Brno, ČSSR), stainless steel castings (containing in %: C 0.15 - 0.27; Mn 0.45 - 0.65; Si 0.40 - 0.70; Cr 4.10 - 6.00; Mo 0.45 - 0.65; Ni_{max} 0.50; P_{max} 0.035; S_{max} 0.035) were heat-treated and calorized and the following mechanical properties were obtained: $\sigma_b \geq 70 \text{ kg/mm}^2$; $\sigma_T = 45 \text{ kg/mm}^2$; $\delta \geq 16\%$; $\psi \geq 30\%$; $a_k \geq 6 \text{ kgm/cm}^2$; HB 180 - 240. The castings are annealed in a gas chamber furnace under the following conditions: heating to 840°C for 8 hours; holding at this temperature - 4 hours; cooling with the furnace down to 740°C during the first hour; to 650°C during 3 hours; to 500 - 450°C during 11 hours; cooling in air. The castings are then oil-quenched from 960°C and held at this temperature for 2 - 3 hours. After quenching hardness HRC is 42 and the grains are relatively fine.

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Subsequent tempering conditions are: holding at 700°C for 4 hours; cooling in air. The final structure is fine sorbite, arisen during martensite decomposition. The castings are degreased with an alcoholic compound or trichlorethylene; pickled in an acid solution (50% HCl; 5% HNO₃; 45% H₂O); washed in hot water; neutralized in a 5% soda solution; washed again and dried; they are then calorized in gas furnaces with thoroughly crushed iron-aluminum (40% Fe) powder with 0.5% NH₄Cl admixture and roasted at 900°C. The calorizing temperature is 900 - 950°C, and holding time at this temperature is 6 - 20 hours. The surface of calorizing boxes is coated with a metallizing layer (2.8 Al : 1 Fe). There are 2 references.

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[Abstracter's note: Complete translation]

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